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No. 23

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STATE COMMISSION GIVES SCIENTIFIC INVENTION AWARDS

OW300159 Beijing XINHUA in English 0149 GMT 30 Dec 79 OW

[Text] Beijing, 30 Dec (XINHUA)--Nineteen scientific inventions were approved in China recently.

The classification for the fourth quarter of the year was made by the 32-member examination and recommendation committee of the State Scientific and Technological Commission set up in late April this year.

The awards are intended to encourage scientific research and invention for China's modernization drive.

One was rated as first class, five as second, ten as third and three as fourth. The awards are given to inventors who make major technological breakthroughs.

The first class award is a certificate of honour, a medal and 10,000 yuan; second class, a certificate, a medal and 5,000 yuan; third class, a certificate, a medal and 2,000 yuan; fourth class, a certificate, a medal and 1,000 yuan.

The technology for melting vanadium-titanium magnetite in a blast furnace ranked first. It was made by the experimental group of the Panzhihua Iron and Steel Company in Sichuan Province. The invention will help the company, one of China's major iron and steel centres, use the rich vanadium-titanium magnetite deposits in the outlying areas. Scientists abroad have been looking for such a method for well over a hundred years.

This is the fourth series of recommendations by this commission this year.

CSO: 4008

REPORT ON INTERNATIONAL GUANGZHOU PHYSICS MEETING

OW080524 Beijing XINHUA Domestic Service in Chinese 1445 GMT 6 Jan 80 OW

[Text] Guangzhou, 6 Jan--The Guangzhou Symposium on the Theory of Particle Physics opened on 5 January. This gathering of noted physicists of Chinese nationality or Chinese origin from different parts of the world is being held on the banks of the Liuxi River at the scenic hotspring resort of Conghua. Participants in the symposium include nearly 50 scholars of Chinese nationality or Chinese origin from the United States, Britain, West Germany, Australia, Malaysia, Singapore and Hong Kong. Over 100 scientists and research workers from our country's various scientific research units and institutions of higher learning also are attending.

Through consultations, an advisory committee was formed. The names of the committee members (in the order of the number of strokes in their surnames) are Wang Gangchang, Zhu Hongyuan, Zhang Wenyu, Tsung-dao Lee, Zhou Peiyuan, Chen-ning Yang, Hu Ning, Qian Sanqiang and Peng Huanwu.

Professor Qian Sanqiang presided over the opening ceremony. Professor Zhou Peiyuan made a speech in which he cited the important achievements made in particle physics during the past 40 years and more. He also said new developments are constantly being made in particle physics research. However, tremendous efforts are still needed to solve the problems arising in the course of this research. The main task of this meeting is to introduce the latest developments in the study of the theory of particle physics, including the regular field theory [gui fang chang li lun 6016 5400 1034 3810 6158], quantum color dynamics [liang zi se dong li que 6852 1311 5331 0520 0500 1331], the theory of the characteristic of phenomena of strong effect [qiang zuo yong di xian xiang xing li lun 1730 0155 3938 4104 3807 6272 1840 3810 6158], the theory of gravitation [yin li li lun 1714 0500 3810 6158], the theory of great unity [da tong yi li lun 1129 4827 0001 3810 6158] and new particle [xin li zi 2450 4721 1311]. At the same time, the meeting will examine some new topics for study. It is anticipated that this symposium will promote and strengthen interchanges among both scholars in our country and those from abroad in furthering the study of particle physics in China.

Professor Chen-ning Yang observed at the meeting: "Beyond promoting scientific interchanges in general, this gala meeting has another special significance. During the early Tang dynasty more than 1,300 years ago, there was a grand meeting in Nanchang. About that meeting, poet Wang Bo wrote the following in his 'Preface to the Tengwangge Collections': 'Good products from the earth are nature's treasures' and 'the presence of heroes brings glory to the place.' With these beautiful words, he described the tremendous potentials China had at that time. Through developing these tremendous potentials in the more than 100 years since, the Chinese nation created the culture of the flourishing Tang era, which was unsurpassed in the world at that time. I think these famous phrases of Wang Bo's can still be used today to describe the peerless potentials of 20th-century China. It is our hope that this meeting will contribute to the discovery and development of these peerless potentials."

In the meeting, Professor Zhu Hongyuan presented a report on his research with regard to the Ceng-zi model [Ceng zi mo xing 1461 1311 2875 0992]; Professor Tsung-dao Lee reported on quantum color dynamics and on the pocket model of Qiang-zi [Qiang zi di kou dai mo xing 1730 1311 4104 0656 5915 2875 0992]; Professor Peng Huanwu made a report on the quantum dynamics treatment of the damped harmonic oscillator [zu ni xie zhen zi di liang zi li xue chu li 7091 1441 6168 2182 1311 4104 6852 1311 0500 1331 5710 3810]; and Professor Wu Dajun of Harvard University in the United States made a report on the quantum field theory [liang zi chang lun 6852 1311 1034 6158] and statistical mechanics.

[OW080547] On the evening of 5 January, the Chinese Academy of Sciences gave a banquet in honor of all scientists attending the symposium. In his toast, Professor Qian Sanqiang said: Today is not only a reunion of old and new friends but also a gala get-together of the Chinese scientists working on the theory of particle physics. I am happy to see that so many scholars, experts, ladies and friends have come from faraway places to attend this discussion meeting and to exchange reports on developments and achievements in particle physics research.

Amid warm applause, Professor Tsung-dao Lee mounted the rostrum in high spirits. He said that it was indeed a great honor to attend such an unprecedented meeting, and that he was happy and proud of the current developments at home. He added: I believe that my feeling is shared by everyone here, especially those from abroad. He said: "The question concerning the age of Chinese scientists has been discussed frequently by many people in recent years. I have compiled very rough statistics while attending this discussion meeting." Professor Tsung-dao Lee then displayed a chart he had prepared. According to his statistics, the youngest participants attending the meeting are about 20 years old while the eldest are 80 years old, whereas most of the participants from abroad are between 40 and 50 years old. Professor Lee said this chart shows that the age distribution of scholars at home is normal and comparatively balanced. However, the age distribution of scholars from abroad is abnormal and rather peculiar.

All this is a very natural phenomenon, since the scholars at home represent the mainstream and the overseas scholars only represent a branch. There can be no branches without the mainstream. He said: "On behalf of the branches abroad, allow me to express our heartfelt thanks to the mainstream, and salute the elder scholars in the field of physics at home. Without your teaching and guidance, we would not be what we are today. As for those of the same occupation and at the same age, we thank you for your support and encouragement over the past many years. We especially thank all of the young scholars and students, because you remind us of the hope and significance of the future."

A cordial atmosphere prevailed at the banquet. All of the scientists exchanged toasts and engaged in friendly conversations until late in the evening.

CSO: 4008

SCIENCE TABLOIDS APPEAL FOR MORE PAPER, BETTER WORKING CONDITIONS

OW061018 Beijing XINHUA Domestic Service in Chinese 0325 GMT 4 Jan 80 OW

[Letter from unidentified XINHUA correspondent: "Appeal From Science and Technology Tabloids' Editors"]

[Excerpts] Beijing, 4 Jan--This correspondent has recently learned from a forum of responsible persons of science and technology tabloids that such tabloids are published in 27 provinces, municipalities and autonomous regions as well as in 5 cities in the country. These tabloids have a total distribution of more than 4.5 million copies, but even though they are welcome reading matter, they still cannot meet the needs of young students, workers, commune members, PLA fighters, educated youths and basic-level cadres.

These tabloids, the size of half a page of a regular newspaper and proceeding from the actual conditions of the local masses, publicize the party's principles and policies in science and technology, disseminate knowledge of the four modernizations, introduce new techniques, report on new achievements in science and praise advanced persons on the scientific and technological front.

However, people have paid little attention to the editing and publication of these welcome tabloids which are conducive to promoting the four modernizations and to raising people's scientific and cultural level. Some science and technology tabloid editors said: Our tabloids have emerged out of crevices, and no priority whatsoever has been given to their paper supply, printing, capital construction and replacement of personnel.

Responsible persons of these tabloids mentioned their two major difficulties: 1) It is difficult for them to get paper, the supply of paper is insufficient and the paper is not up to standard; and 2) the working conditions in these tabloids are very poor. Unlike big newspapers, tabloids in many places have only a few personnel. Because the tabloids are small in scale, the political treatment, working conditions, material benefits and even housing of their personnel are not improved and even "forgotten."

Therefore, they have appealed to departments concerned that the tabloids should not be discriminated against or ignored just because they are small and have only a few personnel and ask for help in surmounting their difficulties.

CSO: 4008

NATIONAL DEVELOPMENTS

BRIEFS

GUANGXI SCIENCE COMMITTEE FORUM--The Guangxi Regional Science and Technology Committee and the Guangxi Science and Technology Association held a forum on the evening of 23 December. They invited some of the people's delegates and CPPCC members in the science and technology circles attending the second sessions of the Fifth Guangxi Regional People's Congress and the Fourth Guangxi Regional CPPCC Committee to discuss Guangxi's four modernizations. Qin Yingji, Zhou Guangchun, Siao Han and (Luo Libin), responsible comrades of the Guangxi regional CCP and revolutionary committees, attended the forum and spoke. Also present were (Liu Yisheng), (Ou Zhen), (Yang Ning), (Tian Ke), (Wang Fu) and (Yang Lielin), responsible comrades of the Guangxi Science and Technology Committee and the Guangxi Science and Technology Association. [HK011642 Nanning Guangxi Regional Service in Mandarin 1130 GMT 24 Dec 79 HK]

HEILONGJIANG SCIENTIFIC ACHIEVEMENTS--The Heilongjiang provincial people's government held a meeting on 28 December to present awards to those who had made major achievements in scientific and technological research. Deputy Governor Li Rui presided over the meeting. A total of 104 awards were presented. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 28 Dec 79 SK]

SHANGHAI SCIENTIFIC KNOWLEDGE--The Research Committee for the Publication of Science Papers and Journals, one of the nine specialized committees under the Chinese Writers Association for the Dissemination of Scientific and Technological Knowledge, held a meeting in Shanghai from 1 to 7 November to discuss how to step up the cooperation of all science newspapers and journals and radio stations throughout the country in order to raise the scientific and technological level of the whole nation. The meeting also discussed solutions for the problems concerning publication of science books and mapped out new tasks for 1980. The meeting elected (Wang Tianyi) chairman of the research committee. [Shanghai City Service in Mandarin 1130 GMT (?7) Nov 79 OW]

SHANGHAI SCIENCE EDUCATION--According to ZHONGGUO QINGNIAN BAO, Shanghai's Education Bureau has ruled that all middle school students will spend 2 hours per week and all primary school students will spend 1 hour per week in developing activities of science and technology. Various middle and primary schools in Shanghai are devising plans to enrich the programs of science and technology. [OW241100 Shanghai City Service in Mandarin 1130 GMT 18 Dec 79 OW]

SICHUAN YOUTH SCIENCE, TECHNOLOGY--The science and technology exhibition of the young people and juveniles in Sichuan was recently concluded. An awards ceremony was held on 8 December in Chengdu. Some 30 pieces of work received first grade prizes, while 68 others received second grade prizes and 107 received third grade prizes. Before ceremony, Du Xingyuan, secretary of the Sichuan Provincial CCP Committee, listened to the work report. Presenting prizes were Yang Chao, secretary of the Sichuan Provincial CCP Committee, Zhang Lixing, Standing Committee member of the provincial CCP committee, Liu Haiquan, vice chairman of the provincial revolutionary committee, and responsible persons of the units concerned. The exhibition displayed 566 pieces of works between June and August in Chengdu. [Chengdu Sichuan Provincial Service in Mandarin 2310 GMT 9 Dec 79 HK]

ZHEJIANG POPULARIZES SCIENCE--At a Zhejiang provincial scientific work conference held on 25 December, Wang Jiwu, chairman of the provincial science and technology association, reported the work done in Zhejiang on promoting academic exchanges and popularizing science. According to him, scientific organizations have been set up in most of the province's prefectures, municipalities and counties, and 55 specialized societies, research units and associations have been established at the provincial level. Science and technology associations at the county level have also expanded their activities. According to incomplete statistics, some 2 million people in the province have benefited from popular science education over the past year. [OW041309 Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 26 Dec 79 OW]

ZHEJIANG FORUM--The Hangzhou Municipal CCP Committee in Zhejiang held a forum on 19 December to discuss matters concerning evaluation and promotion of the municipality's scientific and technical personnel. The forum was addressed by Comrade Zhou Feng, secretary of the Hangzhou Municipal CCP Committee. He stressed that the party committees at all levels must respect the opinions of experts and academic societies in evaluating the performances of scientific and technical personnel. Since July of this year, Hangzhou Municipality has reinstated more than 1,300 scientists and technicians of whom 388 are engineers and deputy engineers. [OW010903 Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 22 Dec 79 OW]

ZHEJIANG SCIENCE CONFERENCE--The Zhejiang Provincial Scientific and Technical Association work conference closed on 28 December after being in session for 4 days. The conference discussed how to develop activities in the new year. In connection with the four modernizations, at yesterday's session, Xue Ju, deputy secretary of the provincial party committee, made a speech, calling on scientific and technical workers to make inventions and innovations and greater contributions to modernization. Liu Yifu, vice governor and vice chairman of the provincial scientific and technological commission, also spoke at yesterday's session. He reviewed the achievements made in the province in the scientific and technological field in 1979, saying that as of the end of November, 282 scientific research projects had been completed in Zhejiang Province. [OW051447 Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 29 Dec 79 OW]

ZHENGZHOU SCIENCE, TECHNOLOGY PROGRESSIVES--The Zhengzhou municipal CCP and revolutionary committees recently held a rally to cite the progressive science and technology collectives and individuals. Taking part in the rally were Dai Suli, deputy provincial governor and chairman of the Henan Provincial Science Committee; and (Zhang Qiying) and (Hong Qiliang), deputy secretaries of the municipal CCP committee; and (Yang Leigao), vice chairman of the Henan Science Committee. The participants revealed that the party committees of many basic-level units have included science and technology work in their daily agenda. They also disclosed that 1,500 science and technology achievements have been scored in Zhengzhou with 435 items being cited at the rally. The progressive individuals were given banners and certificates of commendation at the rally. [Zhengzhou Henan Provincial Service in Mandarin 1100 GMT 8 Dec 79 HK]

YOUTH SCIENCE SYMPOSIUM--Beijing, 21 Dec--School children from all over China have just concluded a science symposium in the national capital at which they swapped information on the scientific experiments they do after school. It was the first symposium of this kind ever held in China. A total of 600 youngsters, ranging between 11 and 17 years old, heard papers on the special interests of 56 junior scientists. Professor Huang Jiasi, vice-president of the Chinese Scientific and Technical Association, encouraged the youngsters to study hard and become good successors to China's veteran scientists. The symposium was sponsored jointly by the Chinese Scientific and Technical Association, the Ministry of Education, the National Physical Culture and Sports Commission and the Central Committee of the Communist Youth League. [Beijing XINHUA in English 0151 GMT 21 Dec 79 OW]

SPECIAL STAMP ISSUE--Beijing, 25 Nov--The Chinese Ministry of Posts and Tele-communications will issue a set of three stamps on Monday (November 26) to mark International Archives Week. One stamp shows the Central Archives main building in Beijing, the second shows a gold cabinet of the Imperial Archives used in the Ming dynasty (1368-1644) and the Qing dynasty (1644-1911), and the third shows the Imperial Archives of the Ming and Qing dynasties. Two stamps have a face value of 8 fen (cents) and the third 60 fen. [Beijing XINHUA in English 0708 GMT 25 Nov 79 OW]

CSO: 4008

SICHUAN RESEARCH INSTITUTES TO CHANGE OPERATION

More Power in Running Affairs

OW250644 Beijing XINHUA in English 0249 GMT 25 Dec 79 OW

[Text] Beijing, 25 Dec (XINHUA)--Scientific research institutes in Sichuan Province, southwest China, will have greater power in running their own affairs, reports today's GUANGMING DAILY.

This was announced at a provincial meeting as one specific measure to speed up the development of science and technology, in line with the nationwide adjustment now being carried out in China's industry and other fields of work.

Within the framework of state plans, the research institutes may choose their own subjects for study, accept or reject assignments from other organizations and have greater power in promoting personnel and in using income.

It was also announced at the meeting that a contract system would be applied in the province, involving 30 per cent of the provincial research projects and 20 per cent of the prefectural projects.

These measures will come into effect in 1980.

It was decided that research institutes should be set up in all large factories and mines and, where conditions permit, in smaller ones, too.

'GUANGMING RIBAO' Report

HK081130 Beijing GUANGMING RIBAO in Chinese 25 Dec 79 p 1 HK

[Report by GUANGMING RIBAO reporter Li Jiajie [2621 1367 2638]: "Sichuan Provincial CCP Committee Proposes Six Measures for Strengthening Scientific and Technological Work"]

[Text] At the recent provincial scientific and technological work conference sponsored by the provincial scientific and technological committee, the Sichuan Provincial CCP Committee demanded that the leading cadres and masses of scientific and technical workers on the science and technology front further emancipate their minds and smash through stereotypes incompatible with reality. These include certain formerly practicable but now inapplicable experiences and those concepts which have been taken for granted but which are incorrect. The aim is to pave the way for the development of scientific and technical undertakings.

The leading comrades of the Sichuan Provincial CCP Committee reaffirmed that the party committees at various levels must put scientific and technological work high on the agenda and give it priority and a proportionately large allotment of manpower and financial and material resources. In line with the spirit of the national scientific and technological work conference, the Sichuan Provincial CCP Committee adopted the provincial scientific and technological committee's proposal and put forward the following six concrete measures to strengthen scientific and technological work:

1. We must give scientific research units greater power in running their own affairs and the power to make their own operational plans and handle personnel and financial matters. Within the framework of state plans, they may choose their own subjects for study. On condition that the fulfillment of assignments from higher authorities is guaranteed, they will have the right to accept or reject assignments from other organizations. The director of a research institute and members of an academic committee will have the power to recommend that scientific and technical workers be promoted to higher technical positions. The director can propose transferring or appointing scientific and technical workers below the rank of section chief. The research institute will have the right to employ scientists and technicians from elsewhere to work on a short-term basis and to hire temporary workers. After fulfilling scientific research assignments, it will have the power to use all its income as it likes within a given budget. These stipulations will be universally introduced on an experimental basis beginning in January next year.

2. We must improve various scientific and technical control programs including control over projects, research results and supplies bought with funds allocated for three special items of outlay. Scientific research projects are to be planned separately at the provincial and prefectural levels. The county will concern itself chiefly with experiments and promotional matters. From the beginning of next year, the whole province will introduce the contract system for choosing scientific research projects--30 percent of those at the provincial level and 20 percent at the prefectural level. All homemade large precision instruments will be arranged by the provincial scientific and technological committee with regard to their research, manufacture and distribution. All popular large scientific research instruments

and equipment purchased with funds allocated by the province for three special items of outlay (or subsidies for the trial manufacture of new products, for middle-stage experiments and for major scientific research items) must be surrendered after the completion of a project. Those to be kept must be paid for at special prices. We must choose a number of items from among the significant research achievements which won prizes at the end of this year and recommend them to provincial planning committee and other departments for incorporation in next year's production and capital construction plans.

Meanwhile, we must choose a certain number to be popularized from the 528 research results which were awarded prizes last year.

3. Letting scientific and technical workers be promoted is part of the effort toward the firm implementation of the policy on intellectuals. From now on, we must shatter conventions and simplify procedures for recommending and approving the promotion of scientific and technical workers. Under the leadership of the organizational department of the provincial party committee and with the participation of the scientific and technological committee and the relevant office in charge, we must "make a joint examination" as a way to speed up the process of examination and approval.

4. We must further improve the working conditions in scientific research organs and raise the living standard for scientific and technical workers and take energetic measures to solve the actual difficulties confronting scientific and technical workers. Research organs under municipalities, prefectures and zhou must rank as counties or regiments with regard to treatment. Scientists and technicians at and above the level of section chief or assistant section chief are entitled to the same treatment in various fields as party and government cadres at the same level. From now on, special targets should be set every year among scientific and technical workers of scientific research organs, colleges and institutes of higher learning and industrial and mining enterprises to solve the problem of long separations between husbands and wives placed in different areas.

Members of their families placed in the countryside should be reentered in the register as nonpeasants. The fulfillment of the said targets should be taken care of by the provincial scientific and technological committee.

[HK081133] 5. We must reorganize scientific research institutes and organs on a universal basis. We must reinforce a number of priority research institutes with manpower and material and financial resources while simultaneously abolishing or integrating those scientific research organs not properly equipped or nonproductive for a long time. With regard to agricultural natural resources and agricultural districts, we must rearrange the distribution of agricultural research organs. Those scientific research organs related to industrial and communications systems should be reorganized in line with the principle of rational division of labor. Within a short period of time, a number of professionally competent and remarkable middle-aged backbone scientific and technical cadres should be chosen for promotion to leadership posts as directors or deputy directors of institutes.

6. The system of setting up scientific research institutes in factories should be introduced. Large industrial and mining enterprises must establish their own scientific research organs. As conditions permit, medium-sized and small industrial and mining enterprises should also establish their own, or several of them handling the same type of products may join in establishing one. Research work should be geared to key technical problems in production and revolved around the tapping of an enterprise's potentialities and the introduction of reforms and innovations.

CSO: 4008

DELEGATION ATTENDS INTERNATIONAL GEODESY CONFERENCE

OW161642 Beijing XINHUA in English 1629 GMT 16 Dec 79 OW

[Text] Canberra, 16 Dec (XINHUA)--The 17th General Assembly of the International Union of Geodesy and Geophysics (IUGG) concluded here yesterday.

The General Assembly, opened on December 2, was attended by 2,000 scientists from 68 countries.

The Chinese National Committee of Geodesy and Geophysics, whose legitimate status in IUGG was restored in 1977, sent 50 scientists to the General Assembly. They presented 34 papers dealing with geodesy, seismology and physics of earth interior, meteorology and atmospheric physics, physical sciences of the ocean, geomagnetion and aeronomy physics, volcanology and chemistry of earth interior, and hydrological sciences. The report on "Earthquake Prediction in China" by Professor Gu Gongxu and two papers on "Earth Tides Research in China" and "The Research of Gravimetry and Figure of the Earth in China" prepared by Professor Fang Jun were highly appreciated.

Professor Gu Gongxu, president of the Chinese National Committee of Geodesy and Geophysics, told XINHUA today that the discussions in the General Assembly of IUGG and in the meetings of its seven affiliated associations have helped us to understand the development and advanced level of geodesy and geophysics in the world, which will promote our research work in these fields. They have also helped strengthening our cooperation with the scientists in the world, he said.

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SCIENTIFIC SURVEYS, LECTURES CONTINUING IN XINJIANG

Beijing GUANGMING RIBAO in Chinese 12 Dec 79 p 2

[Article: "Go to the Border Region to Conduct Scientific Research: Support Scientific Research in the Border Region; Many Scientific Researchers Go to Xinjiang to Conduct Surveys and Give Lectures"]

[Text] According to a report by reporter Huang Dongyuan [7806 0392 0337], this year, many well known scientists, professors as well as scientific and technical workers in our country have gone to the Xinjiang Uygur Autonomous Region with great enthusiasm to conduct surveys, give lectures and render their assistance, which has not only enlivened the academic atmosphere, but also promoted the scientific research work in the autonomous region. Among them are: Agriculturist Cheng Shaojiong [4453 4801 6608], Horticulturist Li Jiawen [2621 1367 2429], Botanists Li Zhengli [2621 2973 3810] and Lu Zhongshu [0712 1813 1859], Phytovirologist Peng Jiamu [1756 0502 2606], Entomologist Huang Kexun [7806 0668 6064], Geologist Sun Dianqing [1327 3013 0615] and Archaeologist Jia Lanpo [6328 5695 0980].

Cheng Shaojiong, vice president of the Chinese Academy of Agricultural Science, who is nearly 80 years old, came to Xinjiang in late September in spite of the hardships to talk to the leading cadres of the agricultural, scientific and technical departments in the autonomous region about the discussions held in the northeastern region and throughout the entire country concerning agricultural ideas and agricultural modernization problems. It was a tremendous promotion to the Xinjiang Uygur Autonomous Region's own discussions on the same important issues. In mid November, the autonomous region's science committee and science association jointly convened a meeting to discuss agricultural ideas and agricultural modernization problems. Agricultural scientific and technical workers as well as experts, professors, scientific and technical personnel and instructors from the educational institutions of the Urumqi Prefecture came to the meeting and put forward many excellent suggestions regarding such problems as the autonomous region's agricultural structure, the exploitation and utilization of agricultural resources, and agro-ecological balance. There was also a lively discussion on which direction to take, i.e., whether the autonomous region should give first place to farming, or to use forestry as a guarantee and combine farming with animal husbandry.

Since their arrival in Xinjiang, many scientists and professors have actively joined their colleagues throughout the autonomous region in scientific research work, and organized lecture activities in a planned and purposeful way. They have also helped to train scientific and technical cadres. Wherever they go, they are warmly welcomed by the cadres and masses. Since 1977, research associate Peng Jiamu of the Shanghai Institute of Biochemistry, who loves to do scientific research work in border regions, has been to Xinjiang for 3 consecutive years to conduct phytovirological research. Together with the scientific researchers of the Xinjiang Institute of Chemistry, he penetrated into the first line of agricultural production located in the northern and southern parts of Tianshan Mountain where he conducted surveys and investigations, and achieved new results in the research on wheat and Hami melon diseases. He discovered the pathogens of two kinds of projectile-shape viruses in Xinjiang wheat. Also, in his study on the flower and leaf diseases of the Hami melon, he found the cause of disease and ways of infection, thus laying down the basis for the prevention of such diseases. Spurred on by Peng Jiamu, the Institute of Chemistry restored its phytopathological research projects which had been at a standstill for several years. Recently, Peng Jiamu was appointed to the concurrent post of vice president of the Xinjiang branch of the Chinese Academy of Sciences.

In Urumqi City, study groups on physics and chemistry were organized by Wu Jingyuan [0124 4842 0337], assistant research fellow of the Institute of High Energy Physics, Chinese Academy of Sciences, Hu Yaoguang [5170 3852 0342], Associate Professor of Physics, Shanghai East China Normal University, and Zhu Baolin [2612 5508 3829], research fellow of the Dalian Institute of Chemistry and Physics. Carefully selected courses, such as "Relativity Theory in Quantum Mechanics," "Quantum Field Theory," "Symmetry Theory," etc were chosen by Wu Jingyuan and Hu Yaoguang who taught almost a whole semester's course within only 3 weeks' time. Professor Lu Zhongshu and Wang Bangxi [3769 6721 6932], a lecturer of plant physiology from Lanzhou University went to Turpan Prefecture, which was hard hit by xerothermic winds, to give academic reports on the affects of xerothermic winds on plant physiology, which was of some instructive use to the local research on the prevention of xerothermic wind calamity.

Xinjiang is a vast land with unique physical geographic features, which provide certain scientific research projects in our country with excellent conditions. In mid September, over a hundred experts in geology and geography, as well as other scientific and technical workers from all over the country came to Xinjiang to participate in a symposium on the Quaternary geology and Quaternary glacier of the Xinjiang region jointly organized by the China Geology Society and the Xinjiang Geology Society. The scientific and technical workers participating in the seminar conducted field surveys of geological phenomena, such as Quaternary glaciers, Quaternary strata, and new tectonic movements in Toutun River near Urumqi, Glacier No 1 at the source of Daxi Creek, and the Tian Lake of Sangong River, etc, which added quite a bit to their perceptual knowledge. At the symposium, many of our country's geological scientific researchers found the opportunity to exchange the results and experiences they had gained through many years of surveying the geology and glaciers of Xinjiang; they also managed to reach a preliminary common understanding on the division of Xinjiang's Quaternary glaciers. Through their first probing into the problem of the Quaternary glacier in Xinjiang's Altay Mountain Region, they discovered tectonic variations in many Quaternary strata in Xinjiang. For example, between Tianshan Mountain, West Kunlun Mountain, Altun Mountain and Tarim Basin, Junggar Basin, the vertical amplitude of the stratigraphical movement is relatively great. Thus, to understand and master such geological changes is extremely useful for guiding Xinjiang's industrial and agricultural production and construction.

9119
CSO: 4008

BRIEFS

SOCIETY OF ASTRONOMY--Wuhan, 12 Nov--The Chinese Society of Astronomy recently held the second annual astro-geodynamics meeting in Wuhan. Experts, professors and scientific-technological workers in the astronomical, surveying, geophysical and geological fields from all over the country presented over 50 academic theses and work reports to the meeting. [Beijing XINHUA Domestic Service in Chinese 0314 GMT 12 Nov 79 OW]

SEDIMENTOLOGY, ORGANIC GEOCHEMISTRY--Beijing, 5 Dec--China has made rapid progress in the study of sedimentation and organic geochemistry. Researchers have widened their scope of study by using microscopic in addition to macroscopic observations and switching from static description to kinetic analysis and from the study of ancient sedimentary rocks to the study of modern sediments. Recently more than 300 sedimentologists and organic geochemists met in Beijing at the first symposium ever held in the PRC. More than 500 theses were read and circulated. It was a successful meeting and the participants were convinced that the study of sedimentation and organic geochemistry in China would soon catch up with contemporary international standards. [OW141537 Beijing XINHUA Domestic Service in Chinese 0339 GMT 5 Dec 79 OW]

CORROSION STUDY SOCIETY--An inaugural meeting of the China Society for the Study of Corrosion and Anticorrosion, and the national seminar on corrosion research were recently held in Hangzhou Municipality, Zhejiang. Some 150 papers were discussed at the national seminar, manifesting China's achievements in the study of corrosion and anticorrosion. Members of the society's board of directors were elected at the meeting. (Li Fu) was elected president of the society. [Beijing Domestic Service in Mandarin 0800 GMT (?15) Dec 79 OW]

PARTICLE PHYSICS MEETING--Hefei, 12 Nov--The enlarged meeting of the Chinese Academy of Sciences particle physics theoretic group was recently held in Hefei, in preparation for the international seminar on particle physics theory to be held in Quangzhou early next year. Noted U.S. physicists Li Cheng-tao and Yang Cheng-ning will attend next year's meeting. Fifty-five scholars and scientific-technological workers from 27 units throughout the country attended the Hefei meeting. At the meeting, 148 theoretical papers were discussed and 48 selected for presentation to next year's international meeting. [OW161334 Beijing XINHUA Domestic Service in Chinese 0321 GMT 12 Nov 79 OW]

LIAONING GEOLOGICAL PROSPECTING--As of the end of October, the Liaoning provincial geological prospecting front prefulfilled its 1979 prospecting assignments, overfulfilling its annual production plans for prospecting iron ore, phosphorus, gold and others. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 30 Nov 79 SK]

ASTRO-PHYSICS SOCIETY--Suzhou, 18 Dec--The Chinese astro-physicists gathered in the scenic city of Suzhou in Jiangsu Province recently to set up a branch of the Astro-Physics Society to study gravity and relativity. Chinese astro-physicists at the first meeting of the branch society elected physicist Hu Ning president of the council and adopted a charter. The meeting was attended by 150 physicists, who heard 50 papers. Physicist Zhou Peiyuan, president of Beijing University, delivered a paper entitled "Significance of Coordinates in Generalized Gravity and Relativity." The council is reserving positions for Taiwan, Hongkong and Macao. [Text] [OW181433 Beijing XINHUA in English 0754 GMT 18 Dec 79 OW]

DISCOVERY OF PLANETOIDS--Nanjing, 23 Dec--Five planetoids discovered by China's Purple Mountain Observatory in Nanjing and listed internationally have been recently named. Planetoid No. 2085, discovered on December 20, 1965, has been named "Henan"; planetoid No. 2162, discovered on January 30, 1966, has been named "Anhui"; planetoid No. 2169, discovered on November 9, 1964, has been named "Taiwan"; planetoid No. 2184, discovered on October 9, 1964, has been named "Fujian"; and planetoid No. 2185, discovered on November 20, 1965, has been named "Guangdong." Earlier, the observatory had named another three planetoids it discovered "Beijing," "Jiangsu" and "Nanjing." The Nanjing Purple Mountain Observatory is under the administration of the Chinese Academy of Sciences. [Beijing XINHUA in English 0708 GMT 23 Dec 79 OW]

SHANXI STONE AGE SKELETON--Taiyuan, 26 Dec--A well-preserved human skeleton from the New Stone Age, estimated to have occurred in China from 4,000 to 8,000 or 9,000 years ago, was found in Jiangxian County, Shanxi Province in late August this year. The skeleton was found by Zhou Hongxiang, a worker at the Chengguan machinery plant in Jiangxian County, while he was digging a kiln foundation in his courtyard. Zhou Hongxiang first found an exquisite pottery spinning wheel and then a 3-centimetre layer of grey ashes. At about 1 metre deep the skeleton lay flat underneath the ashes, a stone arrowhead was firmly wedged into its nose bone. Judging from the complete set of teeth, the person died aged between 24 and 40. The discovery of the skeleton will provide information about ancient wars and weapons. [Text] [OW271145 Beijing XINHUA in English 0255 GMT 26 Dec 79 OW]

GANSU, QINGHAI GLACIER STUDY--Beijing, 8 Jan--A team of scientists who spent 5 years surveying the glaciers of the Qilian mountain range, northwest China, says in a report released this week that the glaciers will continue to develop for a long time to come. The glaciers run more than 800 kilometers along the borders of west Gansu and north Qinghai and they are the most important source of water locally. A study of the glaciers was undertaken by the Chinese Academy of Sciences after the glaciers began to recede in the late 1960's and early 1970's, reducing the amount of water in the local rivers. The report says there are about 3,000 glaciers in the Qilian Mountains. They store about 100,000 million cubic meters of water. The survey has provided data that will help in planning farming, forestry and stock raising in Gansu and Qinghai. [Text] [OW080943 Beijing XINHUA in English 0742 GMT 8 Jan 80 OW]

CSO: 4008

APPLIED SCIENCES

LASER NUCLEAR FUSION RESEARCH REACHING ADVANCED LEVELS

Beijing GUANGMING RIBAO in Chinese 12 Dec 79 p 1

[Article: "Our Country's Laser Nuclear Fusion Research Moving Towards World's Advanced Level--Research Project Manned by a Group of Scientific Workers Averaging Under 40 Years Old"]

[Text] According to the report of reporter Zeng Xisheng [2582 1585 5110], through concerted efforts, the Shanghai Institute of Optics and Precision Instruments of the Chinese Academy of Sciences and other related organizations built a 6-circuit laser nuclear fusion installation which has undergone improvement and development over the past 2 years; relatively great improvements have been made in the performance of the laser system; the laser output power of each circuit has reached 100 million kilowatts. Corresponding developments have been made in various types of testing systems; 17 kinds of laser plasma diagnostic devices such as x-ray pinhole cameras and x-ray concave crystal spectrographs as well as glass spherical micro-targets have been developed. Right now, the overall system is undergoing a new debugging process, and it has entered a new stage of systematic physical testing. The installation is moving towards the world's advanced level, and, internationally, it is highly appraised by some scientists working in the same area.

Previously, when the Shanghai Institute of Optics and Precision Instruments transmitted irradiation waves into a hollow microspherical target with the 2nd and 4th circuits of this type of equipment in April 1977, they observed compression of the target caused by laser. Besides, they developed 1-D fluid mechanics computer codes which were applied in numerical computation; the calculation results basically coincided with those obtained in experiments.

In laser nuclear fusion research, laser "ignition" is used to set off a mini-scale nuclear explosion in an artificially controlled light atomic nucleus which releases nuclear energy momentarily. Its significance is universally acknowledged because it is one of the major strategic targets in contemporary age laser technological application. Although there is yet a long way to go in exploration before it can become a new type of inexhaustible energy source, it does have the possibility of being used as a means of stimulating nuclear explosion tests. Moreover, it is a very ideal strong pulse x-ray point source and pulse neutron source. Thus, there is a competition in laser fusion research among Western countries, especially major nuclear powers who are constantly improving nuclear weapons. In May this year, the U.S. Congress approved a huge sum totalling $U.S. 190 million to be invested in the construction of a supergiant laser nuclear fusion installation [Nova installation?]. After 6 years of suspension, laser nuclear fusion research work in Italy has now resumed. In the world today, the gap between the various major countries which conduct laser nuclear fusion research is merely a matter of a few years.

There are two "ignition" conditions which bring about laser nuclear fusion: First, the light atomic nucleus (usually deuterium or tritium) is heated to 100 million degrees; second, a pressure of hundreds of billions of atmospheric pressure is exerted on deuterium and tritium, compressing their densities to more than 1,000 times over the density of solid matter. In addition, the high temperature of 100 million degrees is maintained for a duration of 1/100,000,000,000th of a second. In order to make it of useful value, of course, it is necessary to increase its output energy above the input energy required for ignition. To merely "strike a balance of loss and gain" between the output and input energy levels, it is necessary to shoot multi-circuit laser beams of 100 billion kilowatts along a light path measuring as long as 100 meters, and "synchronously" hit the target sphere with an instantaneous power 10 times greater than the total electric power generated around the world today. The spatial error in target hitting should not exceed 1/100,000,000,000th of a second. Moreover, it should also shoot thermonuclear substance into a multi-layer target sphere which has a complex structure less than a hairbreadth in diameter. Under such "extreme conditions," the theoretical computation of the physical process is the most involved and most sophisticated type of computation today; foreign countries use electronic computers with capacities ranging over 10 million operations per second. Although there is a great gap between the current research on laser nuclear fusion and the expected goal, it has already given tremendous impetus to the development of many basic sciences and highly advanced technologies of the present age. Owing to the formidable and complex problems involved in laser nuclear fusion research work, some scientists humouously refer to it as "holding a temple fair inside the tip of a horn."

In spite of the relatively poor conditions and the serious disruptions by the ultra-leftist line of Lin Biao and the "gang of four," the Shanghai Institute of Optical and Precision Instruments, Chinese Academy of Sciences has persevered in its research efforts on laser nuclear fusion over the past 14 years, and it has made excellent progress. The achievement of the Shanghai Optical Instrument Institute is chiefly attributed to the fact that it has a contingent of scientific and technical workers who have emancipated their minds and can take on tough battles. There are nearly 30 medium and high level research workers involved in the project whose ages average under 40. Among them is a middle age scientist over 40 yers old who takes the lead in solving academic problems. They are a group of hard working people in the prime of life and bold in making innovations. Some comrades became the founders of our country's laser science and technology long ago. Many of them were persecuted by the ultra-leftist line of Liao Biao and the "gang of four." Even their scientific research theses and reports as well as their efforts to disseminate the results of their scientific research on laser nuclear fusion were obstructed and suppressed by Zhang Chunqiao who had an axe to grind. Today, they have removed the web of false charges and dusted their shoulders. In the spring of science, they are marching onward with even greater vigorous strides against difficulties and obstacles.

9119
CSO: 4008

CONFERENCE ON PARTICLE PHYSICS CONCLUDES

OW121440 Beijing XINHUA in English 0806 GMT 12 Jan 80 OW

[Text] Guangzhou, 12 Jan (XINHUA)--The Conference on the Theory of Particle Physics attended by 150 Chinese and overseas physicists closed here on January 10 after six days of academic exchange and discussions.

Some 85 physicists including Professors Tsung-dao Lee and Chen-ning Yang, Nobel prize winners, presented papers.

Dealing with the fields of quantum chromodynamics, gauge field, gravitational theory, phenomenological theory, the grand unification theory and the new particles of theoretical particle physics, these papers showed encouraging results and some are at a high level, judging by international standards.

Professor Qian Sanqiang, vice president of the Chinese Academy of Sciences, in his speech at the closing session thanked the participants for their efforts to make the conference a success.

He said that the conference had benefited the participants through the exchange of academic information and enhanced mutual understanding and friendship. It would have an important influence on the development of research in the theory of particle physics in China, he said.

The advisory committee to the conference decided to publish a collection of the papers presented.

CSO: 4020

APPLIED SCIENCES

PRC, U.S. SCIENTISTS MAKE REPORTS AT GUANGZHOU MEETING

OW151413 Beijing XINHUA Domestic Service in Chinese 1636 GMT 14 Jan 80 OW

[Excerpts] Guangzhou, 14 Jan--Scientists attending the particle physics symposium in Guangzhou listened earnestly to academic reports on experimental physics by Associate Professor Chen Min of the U.S. Massachusetts Institute of Technology and Associate Professors Wang Zhuxiang and Huo Anxiang of the High Energy Physics Institute of the Chinese Academy of Sciences.

Associate Professor Chen Min reported on recent results of experiments made by the (Ma-ke-jie) group in Hamburg (led by Professor Ding Zhaozhong and including researchers of our country's High Energy Physics Institute) using a positive and negative electron accelerator, which at present has the largest capacity in the world.

He said: The large number of experiments they conducted indicate that the measurement of the electron and two heavy electrons is smaller than 1/1,000,000,000 centimeter, only one-half the size of the electron and heavy electrons they measured last year.

Associate Professor Wang Zhuxiang reported on behalf of the neutrino group of the U.S. (Fei-mi) laboratory (led by Professor Mo Wei) on results obtained from a recent experiment. He said that they determined the elastic scattering cross section of a m (Greek letter, pronounced mu) type neutrino and electron. The result of this experiment is an important support for the theory of the unity of electromagnetism and the weak force put forward by the American scientist (Wen-bo-ge) and the Pakistani scientist (Sa-la-mu).

Associate Professor Huo Anxiang also made a report at the meeting. He spoke on "Research on High Energy Phenomena of Cosmic Rays," on behalf of the cosmic ray laboratory of the High Energy Physics Institute of the Chinese Academy of Sciences, describing how they have built a large emulsion chamber on Ganbala Mountain, 5,500 meters above sea level, in Xizang.

He said: At present, the emulsion chamber has reached a scale [gui mo 6016 2875] of 43 tons of lead and 29 square meters in area and has obtained instances of reference energy [chu shi neng liang 0443 1193 5174 6852] of about 100,000,000,000,000 electron volts. After initial analysis, some interesting results have been obtained.

The report meeting was presided over separately by Zhao Zhongyao, He Zehui and Li Yi.

CSO: 4008

DATA PROCESSING IN CHINESE CHARACTERS DESCRIBED

Beijing GUANGMING RIBAO in Chinese 28 Mar 79 p 3

[Article by Ni Guangnan [0242 0342 0589] of the Institute of Computer Technology, Chinese Academy of Sciences; "Data Processing in Chinese Characters"]

> [Text] Editor's Note: Beginning with this issue we will have a column titled, "Science and Technology and Written Language Reform" that will carry a series of articles that explore in a practical way the questions of: How can written language reform help serve in the building of the socialist four modernizations and how can language reform be made to fit in with the requirements of science and technology? It is hoped that everyone will help promote written language reform work so that it will make the contribution that it should to the new long march!

Every field of modern society daily produces a vast amount of information. In the field of science and technology, for example, more than 100,000 periodicals of a scientific and technical nature are published throughout the world in the course of a single year. Published scientific and technical papers number 1.5 million or more (according to data available at the end of 1973). This is but a portion of the printed information from a single field. Were we to put together the printed data from each individual field, numerical information, picture information, and language information, it would not be difficult to imagine to just what an astounding degree the volume of information has increased in the world of today. So how can such a large volume of information be collected, organized and stored in a timely fashion? How can it be processed to satisfy diverse needs? These are problems that information processing is required to solve. These problems are intimately related to politics, economics, culture, and other areas. The growth of modern societies and their activities already depend more and more on the efficiency of information processing. As a result, in some scientifically and technically advanced countries people speak of an "information-ized society" to describe the important position of information processing. Therefore, the state of the development of information processing is the most important indicator of the scientific and technical level of a country. At the present time when our country is embarking on a new long march in the Four Modernizations, information processing forms an important link in the modernization of science and technology that must be vigorously developed.

Electronic computers possess great capabilities for the processing of information. However since they first came out a fundamental change has occurred in the field of information processing. Statistics show that as of the mid-70's the ratio between machine-processed and human-processed information was 50:1. It will not hurt for us to reflect that though machines have a history of several hundred years of use, right up until the mid-60's the ratio of work done by machines as compared to human labor stood at 10:1. In other words, within the very short space of a few decades, the extent to which computers have helped human brain power has greatly exceeded the extent to which machines have helped man's physical labor during the past several hundred years. Consequently, our nation's people are following with great interest the general applications of electronic computers.

Information comes in many forms among which written information is the most common. At one period written information in our country had to use Chinese characters, which required that information processing systems possess a capability to process Chinese characters. So-called information processing systems are simply a computer system, which includes hardware (computer equipment), software (sequencing systems), and a data base. Computers developed out of the processing of numerals and letters (information written phonetically) and at the present stage of their development, computers cannot process information in Chinese characters. Therefore, development of a special "processing system for information written in Chinese characters" is required. As technology develops, some of the difficulties in computer processing of Chinese characters will be solved; nevertheless, some of the difficulties are inherent in Chinese characters and will remain insoluble unless a fundamental reform is made in the Chinese written language. For example, inputting to a computer of several thousand Chinese characters will present vastly greater difficulties than the inputting of simple phonetic writing. Therefore, if processing of information written in Chinese characters is to achieve the same high efficiency as processing of information written phonetically, this will occur only once Chinese characters have been reformed to become phonetic.

What applications would a processing system for information in Chinese have? Experience abroad shows it would be principally in three fields:

1. The field of everyday processing. Ordinary enterprises and computation centers that use written materials in all sorts or reports, name lists and statistical data. Such processing differs little from the processing of information in the form of numbers or phonetic writing, but through the

use of Chinese characters for inputting, display and outputting of the various items processed, a marked efficiency in data processing is obtained.

2. The field of processing compilations. Use of a processing system for news reporting and for publishing and printing, for the editing of books, periodicals and newspapers, and to do printing work. This requires that the Chinese character information system is able to process individual Chinese characters and that it also possesses editing capabilities. For example, a Chinese character information processing system used by a newspaper should be able, on the command of editors, to carry out complex rearrangement of the copy, making the editing and publication of the newspaper totally automated.

3. The field of information management and data searches. Use of processing systems by organizations, enterprises, and libraries to manage and search all kinds of data, files, and documents. In addition to the usual processing requirements, such a system would also be required to possess capabilities to interpret searches and conduct searches.

The above categories are not exhaustive. Actual information systems might encompass several processing capabilities. Along with future technical growth in information processing in Chinese will come a constant expansion of fields of application, and a simultaneous constant increase in processing capabilities will also take place. At the present time it is general data and editing processing that is paramount; in future it will be a higher level of editing and language processing. So-called language processing requires that the information system have even higher goals of being able automatically to analyze the grammar and the meaning of the copy, automatically extract key words, machine translation and automatic language comprehension.

Problems in Inputting Chinese Characters

Of all the problems in Chinese character information processing, possibly the most vexing is the inputting of Chinese characters. This is because of the large number of Chinese characters and their complex structure. Japanese experience in the use of Chinese characters in information processing systems shows use of between 3000 and 4000 characters in any given field; in the field of specialized terms used in personal and place names, about 8000 characters were required; the total number of Chinese characters used in all fields amounted to between 8000 and 10,000. Given such an enormous number of Chinese characters, there is little doubt that the difficulties in inputting Chinese characters to a computer will be much greater than inputting 20 or 30 letters of an alphabet in a phonetic language.

Though many artificial input methods presently exist, it is impossible to decide which of them is the "best." Keyboards are usually classified on the basis of the number of keys they contain as large keyboards or small keyboards (with some medium keyboards between these two). A brief explanation is given below of artificial methods for inputting Chinese characters for information processing.

1. The large keyboard method. The large keyboard can hold several thousand Chinese characters; its capacity is like that of a Chinese typewriter, but its speed of inputting and its performance is better than that of a Chinese typewriter, because the characters on a large keyboard are distinct printed characters while those on a Chinese typewriter are reversed. Furthermore, a large keyboard is easier to operate than a Chinese typewriter no matter whether the keyboard is the kind operated with two hands or the brushwork style. But the large keyboard model also has its drawbacks; the cost of the keyboard is rather high and its speed is not very fast. To input a character requires a search among several thousand characters and selection by an experienced operator at a rate of between 30 and 60 characters a minute. The speed of a beginner would be much lower. Moreover, between 1 and 3 months are required to train a large keyboard operator.

2. Chinese character coding method. A small number (usually a few score) of symbol codes are used to stand for Chinese characters and a small keyboard may be used for inputting. This method is frequently referred to as Chinese character coding. It may be seen that this is only one way to input Chinese characters and not a way to input all Chinese characters; it is simply a part of the processing of information in Chinese characters.

Some coding resembles the numbers used in telegrams, which cannot be directly read out in the sounds of Chinese characters.

Coding based on the component parts of characters is similar to this. Even in coding systems where phoneticization is paramount, the precise reading of Chinese characters is not maintained. In some systems some initial consonants and simple or compound vowels are combined, and in some the tone of the character is omitted with the result that the reading of the coding is rather ambiguous. Because all writing possesses a certain amount of redundancy (a proportion that is perceived to be superfluous information), it is possible to read with understanding a passage that may contain a few indistinct words. The redundance in information is thereby put to use. But it is hoped that this redundancy can be reduced in the interest of speeding up the inputting of coding. This is the only way to make coding as concise as possible.

Uniqueness is a basic requirement of coding, meaning that a particular code should apply to a specific Chinese character. But in actual fact, frequently many characters use the same code (called duplicate coding). For example, in systems where the phonetic is paramount, homonyms must be distinguished in some way such as one number added for the radical and another number added for the phonetic part of the character. In the end, it is very difficult to avoid having a small number of characters (with the same sound) assigned a duplicate number. Two processing methods may be used to cure this problem. One is to stipulate arbitrarily some rules for coding that must be committed to memory to attain the goal of distinguishing among characters. The second is to depend on the computer to do the processing. In this latter situation, the machine will give feedback signals. As for example the lighting up of a certain color light or the sounding of a buzzer of certain timber to indicate to the operator the need to provide a certain kind of supplementary information. The machine can also display duplicated codes allowing for a decision.

Can several sets of codes be used for a single Chinese character? Such a "dual meaning" may sometimes be permitted. Coding separate parts of a character is an example. Whether the character "章" should be separated into the two parts 立 and 早, or into the two parts 音 and 十 is a debatable matter best resolved by permitting either to be used. A slight expansion of the concept of "dual meaning" can bring about compatibility, namely use of a system that permits use of several coding methods for inputting. A lexicon containing both coding methods would be necessary. If each Chinese character is indicated by a number of equal length, it is called an equal length number; contrarily, it is called an unequal length number. Obviously, if a rather short code number is assigned to a high frequency Chinese character while a longer code number is assigned to a low frequency character, the average length of numbers for unequal length numbers will be shorter than for equal length numbers. The Chinese pinyin system should become a good coding method for inputting to computers, but the problem of characters with different meanings having the same sound must be solved as quickly as possible. Recently in Japan, some machines have used kana (which are derived from kanji) in phrases (phrases meaning independent words plus added components). They had only to input the pronunciation of the kana in the phrases and the computer was able automatically to convert them to a mixed text of kana and kanji. In this process, a search of the lexicon on the basis of the reading sound, consideration of changes in suffixes, and consideration of the grammatical relationships among words was done by the "method of matching the longest equivalents." If there were additional words of the same sound with different meanings, these were finally put up on the display and were selected by the operator or else further data was input to permit differentiation. From this it may be seen that the inputting of Chinese pinyin for direct conversion to Chinese character text is possible.

We are presently unable to make a final assessment of the various inputting methods. Since Chinese characters are so numerous and so complex, it is small wonder that there are methods of every description for inputting them. In comparing these various methods, it is necessary to consider the different requirements for use in different situations and also to balance the various capabilities (speed of input, operating characteristics, training time, special kinds of processing, reliability, equipment requirements....), analyzing the merits and demerits of the total process of information processing. In short, a comparison of effectiveness must be done.

Standard Numbers for Chinese Characters and Chinese Character Storage

Though different methods may be used to input Chinese characters to computers, once in the computer each character must be assigned a standard number so that information can be exchanged from one system to another. (If a standard number indicator is not used, the coding used must be readily convertible to a standard number indicator). The requirement to work out a uniform standard Chinese character code system for use in exchange of information is a very important one. At the time the system is formulated, a ranking of characters based on frequency of use must be made (frequently used, rarely used, etc.), and consideration must be given to a "functional indicator" for the control of information processing functions. A substitution system for processing numbers and phonetic writing that is compatible for general use with the computers must also be worked out. We know that a single letter of the European alphabet takes one byte (or bits) whereas standard coding for a single Chinese character requires two bytes. It has been estimated that for an identical text to be expressed in English and in Chinese, the ratio of number of letters of the alphabet in the English text to the number of Chinese characters in the Chinese text would be 3.7:1. Therefore, were that text to be stored in the computer in its English and its Chinese forms, the ratio of required capacity would be 1.85:1 bytes.* This represents a slight advantage for Chinese characters over phonetic writing; unfortunately vexations in the processing of Chinese characters cancel out this advantage.

In order to be able to use Chinese characters to write an article it is necessary to know the form, the sound, and the meanings of the Chinese characters, which is to say metaphorically that a Chinese character file exists inside the brain. Likewise, if a computer is to process Chinese characters, it must have a Chinese character file in which it stores the Chinese characters, and in addition to containing information about the attributes of Chinese characters such as the standard coding for the characters, the coding that corresponds to frequently used coding methods, the radical of the characters, the number of strokes in the character, the order of the strokes, the sound, and the meaning of the character, as well as the relationship of one character to another.... Of these things, the information about the shape of the character is provided for the use of the character display and the printer; the data about the attributes enables the computer to convert the coding, to compile and encode a lexicon and other processing. In an actual Chinese character information system, the construction of character storage is done, of course, in different technical ways with the amount of information contained differing according to the system. Nevertheless it is a part of the Chinese character information processing system that cannot be ignored.

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*Editor Note: This converts to 1.33 Chinese characters per English word.

We have explored in a preliminary way various problems relating to Chinese character information processing. In this burgeoning field there are many problems requiring further understanding. We hope to strive together and intensify cooperation with other comrades engaged in work on the written language, encoding, computers, information processing, and other matters to tackle and overcome difficult problems. We must realize that some problems go along with the use of Chinese characters. At the present time we must make information processing technology better fit the requirements of the Four Modernizations, and we must conscientiously work toward fundamental reforms in the written language so that Chinese characters will move along in the same direction as the world's writing systems.

CSO: 4008

APPLIED SCIENCES

ERRATUM: In JPRS 74555, 13 November 1979, No 15 of this series on page 13, in the article titled "Shanghai Plays Active Role in Nation's Space Effort," please change "weather satellites" in para. 1 line 3 to read "astronomical satellites"; also in para. 3 line 7 please change, "before the beginning" to read, "at the end."

BRIEFS

SCIENTIFIC ORGANIZATIONS--Beijing, 4 Dec--The State Scientific and Technological Commission on 4 December established two new organizations to promote automation and the scientific-technological development of apparatus and meters. They are the Specialized Automation Section and the Specialized Academic Section for Measuring and Testing Techniques, Apparatus and Meters. They are headed respectively by Sun Youyu and Cao Weilian [2580 4850 1670], vice minister of the First Ministry of Machine Building. [OW131537 Beijing XINHUA Domestic Service in Chinese 0716 GMT 4 Dec 79 OW]

NOTED OPTICIST JOINS CCP--Xian, 13 Dec--Gong Zutong, noted Chinese opticist and director of the Cas Xian Precision Optical Instrument Institute, has recently been admitted into the Chinese Communist Party with the approval of the Shaanxi provincial party committee. One of the forerunners of China's optical science and technology, Gong, now 75, has engaged in scientific research for nearly 50 years. [Beijing XINHUA Domestic Service in Chinese 0120 GMT 13 Dec 79 OW]

FIRST LASER INTERFEROMETER--Kunming, 14 Dec--China has developed its first laser block interferometer [ji guang liang kuai gan she yi 3423 0342 6852 1040 1626 3195 0308]. The laser block interferometer was developed jointly by the Yunnan Optical Instruments Plant, the Yunnan branch of the Chinese Metrological Institute, the Shanghai Standards and Metrology Bureau, the Ningjiang Machine Tool Plant and the Shanghai Scientific Instruments Plant. [Beijing XINHUA Domestic Service in Chinese 0150 GMT 14 Dec 79 OW]

GANSU SEMICONDUCTOR EQUIPMENT--Lanzhou, 15 Dec--The Pingliang Institute of Semiconductor Equipment in Gansu Province has recently turned out seven types of equipment for the manufacture of LSI. In late November, the Fourth Ministry of Machine Building approved these types of equipment and distributed them to factories and scientific research units for use in production. These seven types of equipment are: semiautomatic photoetching machine, circular pattern generator, circular pattern digitizer, internal cutting machine, automatic tester with multiprobes, microfilm lens, and a field separation microscope. [OW231915 Beijing XINHUA Domestic Service in Chinese 0219 GMT 15 Dec 79 OW]

SHANGHAI RADIO, TV SETS--As of November this year, Shanghai has produced more radios, TV sets, tape recorders and electric phonographs, topping those in the same period last year by 6, 87, 114 and 53 percent respectively. The output of TV sets, tape recorders and radios is expected to reach 470,000 sets, 10,000 sets and 3 million sets respectively. [Shanghai City Service in Mandarin 2300 GMT 18 Dec 79 OW]

VACUUM SOCIETY--Lanzhou, 17 Dec--Chinese experts in the field of vacuum science, which plays a key role in the development of a number of modern technologies, have formed the Chinese Vacuum Society at a meeting in Lanzhou, capital of Gansu Province. The society will organise exchanges between its members and foreign experts and try to popularize its scientific knowledge. The honorary president of the society is Lu Ping, former president of Beijing University and deputy minister of the Seventh Ministry of Machine-Building. The president is Jin Jianzhong, director of the Institute of Physics in Lanzhou. [Text] [Beijing XINHUA in English 1228 GMT 17 Dec 79 OW]

NINGXIA METAL TESTER--Yinchuan, 31 Dec--A computer-controlled universal electronic apparatus for testing the strength of metals has been developed by scientists in the Ningxia Hui Autonomous Region. An appraisal given recently by 100 metallurgists from all over China stated that the new apparatus is better than any testing equipment now available in the country in technical performance and accuracy. This is one of a number of major results in scientific research obtained in this minority autonomous region in 1979. Scientists there also developed a detector with a capacity of 600,000 volts for troubleshooting on high voltage electrical equipment. The detector is small and light, convenient for on-the-spot operation. It has been put into serial production. [Text] [OW010658 Beijing XINHUA in English 1222 GMT 31 Dec 79 OW]

JILIN SCIENCE CONFERENCE--Jilin Province recently held a work conference on science and technology in Changchun. The conference relayed and implemented the spirit of the national work conference on science and technology. At the conference, participants studied the issue how to implement the principle of readjusting, restructuring, consolidating and improving on the provincial scientific and technological front so as to further advance scientific and technological work in our province. Comrades Yu Lin [secretary of the Jilin Provincial CCP Committee] and (Xiao Chun) [vice chairman of the Jilin Provincial Revolutionary Committee] attended and spoke at the conference. The conference called on party committees at all levels to strengthen their leadership over scientific and technological work so as to contribute to achieving the four modernizations. [SK150450 Changchun Jilin Provincial Service in Mandarin 1100 GMT 9 Jan 80 SK]

SHAANXI SCIENCE, TECHNOLOGY CIRCULAR--The Shaanxi Provincial CCP Committee recently issued a circular on augmenting the committees and bureaus at the provincial level with leading science and technology cadres in 1980. These cadres will be appointed as bureau directors and deputy directors with some as acting chief engineers to enhance the level of management. [Xian Shaanxi Provincial Service in Mandarin 1100 GMT 30 Dec 79 HK]

CSO: 4008

PRC MEDICAL ASSOCIATION HOLDS BIRTH CONTROL SYMPOSIUM

OW301448 Beijing XINHUA in English 1238 GMT 30 Dec 79 OW

[Text] Beijing, 30 Dec (XINHUA)--Popularizing vasectomies and further study of oral contraceptives for men were among a number of recommendations made by Chinese medical scholars at a recent symposium on birth control held in Beijing.

Professor Wu Jieping, a master-surgeon in urinary organs, called for popularizing vasectomies, or male sterilization operations, because the surgery required is much simpler and safer than the sterilization operation for women involving tying the Fallopian tubes. He added that the vasectomy techniques in China are advanced by world standards, but that many men are still reluctant to undergo the operation.

Oral contraceptives for men are already in use in China, and further study of their use and effects was stressed. The most effective oral contraceptive for men is "gossypol," a substance found in cottonseed oil. Reports indicate it has a success rate of 98.62 per cent, on the basis of 10,000 clinical cases. Men who stop taking the pill soon regain their normal sperm count.

Some specialists also emphasized the importance of controlling China's population growth by officially encouraging one-child families.

Qian Xinzhong, minister of public health and deputy head of the leading group under the State Council in charge of family planning, stressed improvement in maternity and child care and proper care of elderly people who are childless, along with the birth control programme.

The symposium was sponsored by the Chinese Medical Association and chaired by Professor Lin Qiaozhi, a noted gynecologist and obstetrician. Over 800 medical specialists and family planning workers in 22 municipalities and provincial and regional capitals followed the proceedings through a microwave video transmission network.

CSO: 4008

LIFE SCIENCES

'RENMIN RIBAO' COMMENTATOR CALLS FOR SCHISTOSOMIASIS CONTROL

HK030603 Beijing RENMIN RIBAO in Chinese 26 Dec 79 p 4 HK

[Article by commentator: "Firmly Carry Out the Work of Schistosomiasis Control Through to the End"]

[Text] Getting rid of schistosomiasis and protecting the people's health are the major issues about which Chairman Mao and Premier Zhou were greatly concerned during their lifetime. These are also the objectives of the protracted struggle of the vast numbers of schistosomiasis prevention personnel. After the "gang of four" were smashed, these personnel have done a great deal of work under the leadership of the local CCP committees concerned and the schistosomiasis prevention leading groups in 13 southern provinces, municipalities or autonomous regions. Scientific research on the prevention of schistosomiasis has brought about new developments and mass prevention and treatment of this disease and better results have also been achieved. After these 2 years of work and the efforts made in the past more than two decades, we have successfully dealt with two-thirds of oncomelania-ridden areas, reduced the number of people suffering from schistosomiasis by over two-thirds and basically gotten rid of this disease in approximately 200 counties (cities). The work of schistosomiasis prevention has now entered a crucial stage. If we press on to the end, we may be able to win the victory of thoroughly eliminating schistosomiasis. If we slacken our efforts, we may meet with a setback and lose time in eliminating the disease. The CCP committees and the people's government at all levels in the southern provinces, municipalities and autonomous regions must clearly understand the situation, strengthen their leadership and firmly grasp the work of schistosomiasis prevention through to the end until we have won a complete victory.

We must see the protracted nature of schistosomiasis prevention and be ready to fight over a long period. The factors for the spread of schistosomiasis are very complicated. It is related to oncomelania--the intermediate host of this disease--which spreads wide, breeds fast and is difficult to wipe out. It is also related to the economic and cultural standards of different places and the habits and customs of the inhabitants. Arduous and unremitting efforts are required to bring this disease under permanent control. Some districts have met the requirement of basically eliminating this disease. However, they still have a great deal of work to do before it is thoroughly eliminated. Experiences gained in various places have shown that if we grasp, stop, relax and then press the work, we will be in a cycle of eliminating oncomelanias in winter and spring, allowing it to breed in summer and autumn, curing the disease in winter and spring and being infected again in summer and autumn. This will cause a tremendous waste of manpower, material resources and money and we will be unable to achieve the objectives of eliminating and controlling the disease and protecting the people's health. We must continue to grasp schistosomiasis prevention frequently, constantly and repeatedly. We must do a good job of eliminating oncomelanias, preventing infection and curing the patients. Eliminating oncomelanias is an essential measure for getting rid of schistosomiasis. Therefore, oncomelanias should be checked frequently and wiped out repeatedly. However, it still exists in vast swamp areas and cannot be eliminated immediately. That is why we must do a good job of prevention and protection, control of waste products and safe use of water to reduce the chance of infection. We must carry out regular schistosomiasis inspection and work hard at treating the patients. This will not only protect the people's health, but also reduce the source of infection and prevent the spread of schistosomiasis. After all, we must combine all measures of prevention and control in an organic way and speed up the work of schistosomiasis prevention.

[HK030609] Like all other matters, schistosomiasis has its objective laws of coming into being, developing and dying out. To do a good job of schistosomiasis prevention, we must study, understand and master these laws, firmly grasp the scientific research on schistosomiasis prevention and adopt scientific methods and advanced technology in the work. Practice has proved that only if there is a new breakthrough in the scientific research can there be a new breakthrough in the work. We must bring the roles of scientists, research workers and technicians fully into play. We must rely on them to continue discovering and mastering the laws and characteristics of schistosomiasis prevention and to constantly study and invent more effective methods and technological measures. We must pass on the scientific technology to the masses and the professional personnel so that they can master the scientific skills of prevention and control. Our experiences of integrating scientific technology and mass movements and of combining popularization with raising standards are practical methods and must be maintained.

The work of schistosomiasis prevention and control involves work of many areas. We must organize the concerned departments of sanitation, agriculture, water conservancy, light industry and so forth to make concerted efforts. Therefore, we must strengthen the party's unified leadership. The previous achievements in schistosomiasis prevention have been made under the leadership of the party committees and through the concerted efforts of all departments concerned. The schistosomiasis prevention leading groups at all levels must further organize the efforts of all departments concerned to cooperate closely and make the tasks a success under the unified leadership of the party committees and the people's government at all levels. So long as we work hard and make concerted and unremitting efforts, we will be able to grasp schistosomiasis prevention in a more painstaking, practical and effective way. The disgusting epidemic of schistosomiasis will soon be thoroughly driven out of China.

CSO: 4008

REGULATIONS ON RURAL COOPERATIVE MEDICAL SERVICE DRAFTED

OW251151 Beijing XINHUA Domestic Service in Chinese 1251 GMT 23 Dec 79 OW

[Excerpts] Beijing, 23 Dec--The public health, agriculture and finance ministries, the State Pharmaceutical Bureau and the All-China Federation of Supply and Marketing Cooperatives recently issued "Regulations on Rural Cooperative Medical Service (Experimental Draft)," requiring all localities to strengthen leadership, constantly sum up experience and properly solve existing problems to consolidate and perfect the rural cooperative medical service system so as to contribute to agricultural modernization.

The draft regulations point out: Production brigades engaged in cooperative medical service should set up medical centers (clinics) whose duties are: 1) To propagandize and implement the various principles and policies on public health formulated by the state; 2) to mobilize the masses to launch a patriotic sanitation movement with emphasis on the elimination of pests and prevention of diseases; 3) to do a real good job in medical treatment; 4) to collect, plant, process and utilize Chinese herb medicines; 5) to give professional training and technical guidance to medical assistants and midwives of production teams; 6) to promote late marriage and planned parenthood; 7) to give guidance to maternal and child care work; and 8) to spread common scientific information on health.

Funds for cooperative medical service will be raised by individuals and collectives participating in this service and will be chiefly used for commune members' medical treatment. Cooperative medical centers will not be run as enterprises or sideline projects; they should not be required to turn in profits to the state.

Each production brigade should have at least two certified barefoot doctors including at least one female. Barefoot doctors should combine medical and farm work and persist in taking part in collective labor (including the collecting of medicinal herbs). They should be recipients in the collective's distribution of income. Medical administrative departments at all levels should consider it an important task to help develop the cooperative medical service system and raise the barefoot doctors' standards.

CSO: 4008

LIFE SCIENCES

GREAT STRIDES CLAIMED IN MICROSCOPIC SURGERY

Beijing BEIJING RIBAO in Chinese 22 Oct 79 p 1

[Article: Technical Standard of Microscopic Surgery in Beijing Has Remarkably Improved"]

[Text] Since the smashing of the "gang of four", the technical standard of microscopic surgery in Beijing has remarkably improved. Investigations and applications of some of the techniques of microscopic surgery has approached advanced levels, both at home and abroad.

Microscopic surgery is a new branch of surgery developed in a little over 10 years. The development of microscopic surgery made those operations successful, which were impossible under ordinary circumstances, such as the grafting of amputated fingers, homograft (skin, muscle and bone, etc.) transplantation, compound tissue (muscle and skin, rib and skin) transplantation, etc.

Before the Cultural Revolution experimental microscopic surgery and clinical work had been undertaken in Beijing. Experimental grafting of rabbit ears and the grafting of amputated fingers of the human body were successfully performed. However, work in microscopic surgery was disrupted several years ago when the "gang of four" was in its heyday.

After the fall of the "gang of four", concerned parties in Beijing actively joined forces and started scientific studies and clinical work in microscopic surgery. Therefore, microscopic surgery blooms again such as a beautiful flower. Ji Shui Tan Hospital, Beijing, is the one that started early in microscopic surgery. In 1977, this hosital organized a microscopic surgery research unit. After that, operations such as an isolated skin flap for anastomosis of blood vessels, grafting of isolated muscle tissue and grafting of toes for the reconstruction of thumbs followed one another rapidly. In collaboration with the Beijing Childrens' Hospital, they transplanted isolated fibula and treated congenital tibial pseudoarthrosis. In December of the same year, they transplanted major omentum for the reconstruction of wound surface, thus filling the gap in this field in China. In 1978, this hospital initiated the operation of an axial skin flap of major omentum. This operation is not restricted by the blood supply from cutaneous blood vessels;

it has received much attention both at home and abroad. In the early half of this year, they successfully transplanted periosteum for the reconstruction of a bone defect. They also developed animal experiments in heterograft of major omentum, and made its transition into the clinical application. At the Xuanwu Hospital, Beijing, the neurosurgery staff developed microscopic surgery in 1976. Since then, they have made rapid clinical advances. In the field of brain tumors, they have developed microsurgery for pituitary tumors, acoustic nerve tumors, and the resection of deep brain tumors where lesions are located in the deeper portions of the brain. In the brain vascular diseases, they developed operations for cerebral aneurysm, cerebral vascular anomaly, bypath for cerebral embolism, as well as microscopic surgery of cerebral hemorrhage. In the past, the mortality rate of these diseases, treated with conventional surgery, was always relatively high. After the development of microscopic surgery, operation mortality was recorded as low as 3 percent, which equals advanced levels both at home and abroad. Also, this hospital developed microscopic surgery operations for nerve diseases, such as anastomosis of severed nerves, neurorrhaphy in resection of neurofibroma, anastomosis of facial serves and anastomosis of accessory nerve.

At present, microscopic surgery is still a newly-rising science both a home and abroad, and much remains to be investigated. The medical staff of microscopic surgery in Beijing pledges to study hard in order to make more progress in this field to contribute to the development of the medical sciences.

9474-R
CSO: 4008

PROGRESS NOTED IN TREATMENT OF ESOPHAGEAL CARCINOMA

Beijing BEIJING RIBAO in Chinese 22 Oct 79 p 1

[Article: "Internationally China Is Leading in the Level of Surgical Treatment of Esophageal Carcinoma "]

[Text] Xinhua, on 21 October 1979: China's well-known chest surgeon, Professor Wu Yingkai stated to the reporter of RENMIN RIBAO that the technical level and the 5-year survival rate in the surgical treatment of esophageal carcinoma in China is now the highest in the world.

Esophageal carcinoma is a malignant tumor frequently encountered in China. Since 1958, China has developed a broad general investigation of esophageal carcinoma in the provinces of Henan, Shanxi, Shandong, and Hebei, and it has been found that the morbidity and the mortality of esophageal carcinoma are highest in these areas. In Lin County, Henan Province, the morbidity was as high as 1.3 per 1,000.

At the Lin County Hospital, in the last 10 years, surgery has been performed on more than 2,000 esophageal carcinoma patients. The 5-year survival rate reached 44 percent after the resection; among 200 early cases, it was 90.3 percent. However, the international 5-year survival rate does not exceed 20 percent in general.

Professor Wu Yingkai stated that for years medical societies in countries all over the world have had pessimistic estimates in the surgical treatment of esophageal carcinoma. However, in China, this has not been the case and the experience in Lin County especially is noteworthy.

The future direction is early diagnosis and early operation; amelioration of the mechanical anastomotic devices, and the adoption of auxiliary treatments such as radiation and both Western and Chinese medical treatments.

9474-R
CSO: 4008

BRIEFS

EYEGROUND DIAGNOSTIC CAMERA--Fuzhou, 19 Nov--China has produced its first high-speed fluorescent camera which is used to diagnose lesions on the eyeground, the inside of the eyeball which can be seen through the pupil. It was made by the eye, ear, nose and throat department of a Fuzhou military hospital in collaboration with local scientific instruments factories. This electronically-controlled fluorescent camera is able to take two to eight photographs per second, is easy to operate and makes possible much more accurate diagnosis of eye conditions. A doctor can observe and record very small changes in structure, blood circulation and any rupture or seepage from blood vessels on the eyeground. [Text] [OW211331 Beijing XINHUA in English 1206 GMT 19 Nov 79 OW]

SUCCESSFUL ZOO BREEDING--Xian, 26 Nov--Detailed investigation by the Xian Zoo into the living and eating habits of China's rare golden-haired monkeys has brought the animal's survival rate up by 85 percent this year in the critical two weeks after capture. This was made known in a report by the zoo to a national zoo conference held here recently. This valuable animal, also called the snub-nosed langur, is found mainly in (?Sichuan), Gansu and the Qinling Mountains in Shaanxi in birch and coniferous forests. More than 100 papers on the breeding, propagating, domestication and medical treatment of rare wild animals were submitted to the conference. These included the domestication of the red-crested crane in subzero temperatures; the first baby addx, a kind of antelope found in the Himalayas and Hengduan Mountains; the breeding of the Manchurian tiger; and a report by the Beijing Zoo on its successful experiments with artificial insemination of the giant panda. A national center to exchange and study scientific information from zoos was founded in July last year. [Beijing XINHUA in English 0713 GMT 26 Nov 79 OW]

[illegible]G FLORA, FAUNA BOOK--Xining, 4 Jan--"Survey of the Flora and Fauna [illegible]ri (Ari) Prefecture, Tibet" was recently published by the China Science Press. The writing is the outcome of a 4-month survey made in 197[illegible] by a 16-member team from the Biological Research Institute of Qinghai Province. Only 50 species of plants and animals had been identified in the region in the past. The survey team, however, gathered more than 14,000 specimens and identified 349 species or sub-species of plants, 91 of birds, 25 of animals, 12 of fish and two of reptiles. No examples of amphibians were found. [OW041309 Beijing XINHUA in English 0723 GMT 4 Jan 80 OW]

MINORITY MEDICAL EDUCATION--Beijing, 12 Dec--Seventeen medical colleges and 78 health schools have been set up in China's minority nationality areas, reports today's GUANGMING DAILY. These institutions are located in the Nei Monggol, Ningxia Hui, Xinjiang Uygur, Guangxi Zhuang and Xizang autonomous regions as well as in autonomous prefectures in eight provinces. Institutes for study and research in traditional Tibetan, Mongolian and Uygur medicine also have been set up as part of the effort to develop medical education in minority areas. The Nei Monggol Medical College has conducted investigations into sources of Mongolian herbal and other medicines, 18 of which are now in China's pharmacopoeia. Progress is being made in a study on the effects of high altitude on the human heart and the blood vessels which is being conducted at the Qinghai Medical College on the Xizang-Qinghai Plateau, the paper says. [Text] [Beijing XINHUA in English 0710 GMT 12 Dec 79 OW]

ADVANCES IN PLASTIC SURGERY--Shenyang, 28 Nov--Surgeon Yang Guofan's successful use of forearm flaps, secondary flaps and vascularized flaps for grafts, is considered a new breakthrough in both plastic surgery and microsurgery in China and possibly in the world, according to Professor Song Ruyao, president of the Hospital of Plastic Surgery under the Chinese Academy of Medical Sciences. Yang Guofan of the general hospital of the PLA Shenyang units has been a plastic surgeon for two decades. He discovered that a mass of tissue from a patient's forearm was suitable for grafts on the head and face. A secondary flap is a skin graft of two flaps joined together to cover large-area wounds. [Beijing XINHUA in English 0703 GMT 28 Nov 79 OW]

OPTICAL SOCIETY ESTABLISHED--Beijing, 15 Dec--The Chinese Optical Society was set up here today after a six-day founding congress. Veteran optician Yan Jici, vice-president of the Chinese Academy of Sciences, has been elected honorary president of the society's council. Professor Wang Daheng, director of the Institute of Optical and Precision Machinery in Changchun of the Chinese Academy of Sciences, has been elected president of the society's council. Two hundred opticians representing 150,000 optical workers attended. The charter adopted by the society stipulates that its main task is to organize academic exchanges among its members and foreign colleagues and to issue academic and popular science publications. The charter says that the society will seek the advice of optical workers in promoting the development of optics in China. [Text] [Beijing XINHUA in English 0709 GMT 15 Dec 79 OW]

ENTOMOLOGY BOOK REPUBLISHED--Xian, 28 Nov--A revised edition of the first history of entomology in China will soon come off the press. The author is 68-year-old Professor Zhou Yao of the Northwest Agricultural Institute, who has devoted more than 40 years to the study of insects. The book "Early Entomological Studies of China" was written between 1954 and 1956 and published in 1957 by the China Science Publishing House. In 1977 Professor Zhou Yao rewrote the book, dividing it into three sections: "The Beneficial Use of Insects in Ancient China," "Prevention and Control of Insect Pests in Ancient China" and "Entomological Studies in Ancient China." Professor Zhou has now added new archaeological materials and historical data. In the revised edition he takes the history of silkworm culture back to 5,200 years ago, and the first Chinese record of the locust to the Yin dynasty (3,300 years ago). [OW281145 Beijing XINHUA in English 0712 GMT 28 Nov 79 OW]

NEW MEDICAL BOOKS--Shijiazhuang, 25 Dec--The People's Health Publishing House is publishing a set of medical reference books entitled "Questions and Answers on Clinical Medicine." It consists of three volumes and contains more than 3 million words and 300 illustrations. The first volume has already come off the presses. [Beijing XINHUA Domestic Service in Chinese 0310 GMT 25 Dec 79 OW]

BEIJING PHARMACEUTICAL EXHIBITION--Beijing, 3 Dec--The State Pharmaceutical Administration is sponsoring a national exhibition of medicines in Beijing. The exhibition introduces the rapid development of China's pharmaceutical industry and displays over 1,400 kinds of raw materials and medicines, including medicines for resisting tumors and for treating heart disease, hepatitis, tuberculosis, bronchitis, and diseases of the digestive system, as well as contraceptives, antibiotics, and various types of tonic medicine produced in 29 provinces, municipalities and autonomous regions throughout the country. Started on 15 November, the exhibition is scheduled to be closed on 15 December. [Beijing XINHUA Domestic Service in Chinese 0150 GMT 3 Dec 79 OW]

RED CROSS CONFERENCE--The 1979 work conference of the Chinese Red Cross Society closed in Shanghai on 11 December. Leaders of Red Cross societies in China's 14 provinces, municipalities and autonomous regions attended the conference. Yang Chun, leading comrade of the Ministry of Public Health and vice president of the Chinese Red Cross Society, presided over the conference and delivered a speech. The conference summed up the work done in the past year and made work arrangements for 1980. [Shanghai City Service in Mandarin 0100 GMT 12 Dec 79 OW]

NATIONAL MEDICAL MEETING--A national medical academic conference for chilblain and skin diseases took place in Hefei Municipality, Anhui, 24-27 November. It was attended by representatives from 21 provinces and municipalities and 63 units. It reviewed the major topics of the 15th international academic meeting for the prevention of winter skin diseases, exchanged experiences and discussed future tasks. A national group for the treatment of chilblain and skin diseases was established at the conference. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 5 Dec 79 OW]

BIOLOGICAL-MEDICAL-ENGINEERING GROUP--Chengdu, 21 Nov--The biological-medical-engineering group of the State Scientific and Technological Commission was established in Chongqing in mid-November. Professor Huang Jiasi, vice chairman of the China Scientific and Technical Association and president of the Chinese Academy of Medical Sciences, was appointed leader of the group. [Beijing XINHUA Domestic Service in Chinese 0115 GMT 21 Nov 79 OW]

FORENSIC MEDICINE MEETING--Xian, 15 Dec--More than 130 legal medical workers of judicial and public security departments and teachers and researchers in forensic medicine of universities from all parts of the country recently held a forensic medicine academic meeting in Xian. More than 100 academic papers and special reports on advanced foreign technology in the field of forensic medicine were presented at the meeting. [Beijing XINHUA Domestic Service in Chinese 0108 GMT 15 Dec 79 OW]

BLOOD TRANSFUSION CONFERENCE--The Public Health Ministry held a blood transfusion forum in Shanghai from 1 to 7 December, attended by leading comrades of public health bureaus and blood donation centers in 20 provinces, municipalities and autonomous regions. Yang Chun and Wang Min, vice presidents of the Red Cross Society of China, were present. Qian Xianhong, minister of public health, addressed the conference, urging effective measures to improve the backwardness in blood donation practice in China and to institute a system of voluntary blood donation by the citizens. On 7 December, 24 representatives at the conference donated their blood at the (Zhongxing) blood donation center in Shanghai. [Shanghai City Service in Mandarin 2300 GMT 7 Dec 79 OW]

WUHAN SCHISTOSOMIASIS PREVENTION--The people in Wuhan Municipality have scored encouraging achievement in preventing schistosomiasis. In the first 10 months of 1979, an area equal to 60,000 mu of snails was eliminated. Another area equal to 21,000 mu of snails was completely rid of snails, accounting for one-third of the total areas that should be completely freed from snails throughout the province. At present, the key schistosomiasis areas in Wuhan have been basically rid of snails. The number of patients has been reduced by 4,000. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 29 Nov 79 HK]

CHANGSHA NATIONAL GENETICS MEETING--The first report meeting of the Chinese Society of Genetics to discuss theses on human and medical genetics was held in Changsha from 25 to 30 November. Some 350 representatives from various medical colleges, universities, scientific research units and hospitals throughout the country submitted approximately 400 academic theses. At the meeting, responsible comrades of the Hunan Provincial CCP Committee visited some representatives attending the meeting. [HK110359 Changsha Hunan Provincial Service in Mandarin 2315 GMT 4 Dec 79 HK]

RESEARCH ON EUGENICS--Changsha, 15 Dec--Eugenics, which has long been considered a forbidden zone in research, was again brought up at the recent national academic report meeting on anthropology, medicine and genetics and attracted wide attention. The experts held that while our country is developing family planning, it is necessary to study and promote eugenics because it has a bearing on the four modernizations, the future of the Chinese people and the happiness of every family. On why eugenics was considered a forbidden zone in research, the experts said: Because of historical reasons, people always associated eugenics with racial discrimination and racial extinction as soon as the term was mentioned. This is in fact a misconception. Hereditary diseases have no race or class boundaries. As a science, eugenics itself has no class character. It is possible that this science may be distorted and exploited by racists to serve racial discrimination, while on the other hand it can also be applied by the progressive class to bring benefit to mankind. This meeting in Changsha was attended by nearly 200 professors, experts and medical personnel engaged in the study of genetics. [Chen Yani] [Excerpts] [OW170651 Beijing XINHUA Domestic Service in Chinese 0324 GMT 15 Dec 79 OW]

CSO: 4008

NOTED METALLURGIST YANG SHUTANG ADMITTED TO PARTY

Beijing GONGREN RIBAO in Chinese 3 Dec 79 p 1

[Article by Pan Zhenquan [3382 2182 0356]: "Metallurgical Expert Yang Shutang Admitted to the Party with Honor"]

[Text] On November 6, Comrade Yang Shutang [2799 2885 2768], deputy to the Fifth National People's Congress, Consultant to the Anshan Steel Company, and a veteran metallurgical expert over 70 years old, was admitted into the Chinese Communist Party with honor.

Comrade Yang Shutang graduated from the Tianjin National Beiyang University in 1934, and went to study in Germany in 1937. Before the liberation, he was an engineer of the Chongqing Steel Mill and professor in the Mining and Metallurgy Department of Chongqing University. After liberation, he became manager of the Anshan Steel Production Department, Director of the Central Testing Division, and Deputy Manager/Chief Engineer of the Anshan Steel Company.

Comrade Yang Shutang has been in the metallurgical technical profession for some 40 years, and he has accumulated a wealth of valuable experience. He has made great contributions to the development of the Anshan steel production. During the Great Cultural Revolution, Comrade Yang Shutang was persecuted by Lin Biao and the "gang of four" who framed him as "Anshan Steel's No 1 reactionary technical authority" and a host of other charges. But from beginning to end, he firmly believed in the party and was fully confident of the future. Throughout the entire period of persecution, he persevered in studying, and in 3 years' time, he managed to read materials on new developments in steelmaking in foreign countries around the world. He also supplied the Anshan Steel Company with experiences related to the application of new techniques and new technologies.

After the "gang of four" was smashed, Comrade Yang Shutang summoned up his energy; with strong fighting will, he made positive contributions to the improvement of the rotary furnace's working life and operation technology. In compliance with Yang Shutang's application to join the party, and also in view of his conduct, the party organization has approved his admittance as a probationary member of the Chinese Communist Party.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

CHINA VACUUM SOCIETY ESTABLISHED

Beijing GUANGMING RIBAO in Chinese 9 Dec 79 p 2

[Article by Gu Yonggao [7357 3057 7559]: "Inauguration Meeting of the China Vacuum Society"]

[Text] Recently, the China Vacuum Society [Zhongguo Zhenkong Xuehui 0022 0948 4176 4500 1331 2585] held its inauguration meeting and the First Academic Symposium in Lanzhou.

Over the past 30 years, great developments have been achieved in our country's vacuum science and technology. For example, encouraging progress has been made in the completion of a large-scale ultra high vacuum warm environment simulator for aerospace application; finding solutions to vacuum technical problems related to atomic energy, vacuum metallurgy and electronic devices; as well as research projects on newly developed surface analyzers and surface physics.

Some 240 scientists, scientific and technical workers and instructors from all over the country came to participate in the conference. Over 190 thesis and reports were submitted to the conference, and more than 160 of them were presented for exchange and discussion. At the meeting, some well known scientists who are currently engaged in vacuum scientific and technical research projects in our country delivered important academic reports concerning how to further develop our country's vacuum science and technology.

Professor Nuo-le-ev, a West German friend and a vacuum scientist, participated in the conference and presented an academic report. The convention also received congratulation cables from Hayashi Shuzei, president of the Japan Vacuum Corporation, and Johnson, International Operations Director of the U.S. Ai-mo-er Physics Electronics Department. During the conference, Chinese and foreign scientists conducted academic exchanges. Both sides expressed the desire to enhance academic exchange activities in the future so as to learn from each other and thus help each other forward.

At the request of the China Scientific and Technical Association, the conference was sponsored by the Lanzhou Institute of Physics [Lanzhou Wuli Yanjiusuo 5895 1558 3670 3810 4282 4496 2076], a supporting unit of the China Vacuum Society. The meeting approved the constitution of the China Vacuum Society, elected the 1st Council of the China Vacuum Society, and set up six subordinate disciplinary committees and the editorial board of the journal VACUUM SCIENCE and TECHNOLOGY.

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CHINA PSYCHOLOGY SOCIETY HOLDS SYMPOSIUM

Tianjin TIANJIN RIBAO in Chinese 3 Dec 79 p 1

[Article by Sha Yansun [3097 5888 1327]: "Foster Academic Democracy, Act in the Spirit of Letting a Hundred Schools of Thought Contend--China Psychology Society Holds 3rd Academic Annual Symposium in Tianjin"]

[Text] A few days ago, the China Psychology Society held its 3rd Academic Annual Symposium in Tianjin. According to the representatives, academic democracy and spirit of letting a hundred schools of thought contend were stressed throughout the conference, thus enabling the participants to help each other forward and advance together. It was an academic meeting filled with warmth in which a hundred flowers blossomed and produced rich harvests.

Some 300 psychological science workers from 28 provinces, cities and autonomous regions (except Sizang and Taiwan) across the country were present at the annual symposium. Actively participating in the convention and leading the various group activities in spite of their advanced age of over 70 were some of our country's veteran psychologists: Pan Shu [3382 5486], Chen Li [7115 4539], Gao Juefu [7559 6030 2421], Zhu Zhixian [2612 2535 6343] and Huang Yusheng [7806 6877 3932]. During the one-week academic exchange activities, representatives from all over the country compared notes on research achievements in various branch areas of psychology, freely discussed the importance of psychology in our country's Four Modernizations and construction, reviewed the historical development of psychology, and looked into the bright future ahead in psychological work.

The comrades at the symposium pointed out that psychology is a science which enables man to study about himself; it is the principal science among the various sciences related to the study of man; like philosophy, it has a long history which goes back to ancient times; and now it has developed into ten-odd branches which are extensively applied in various fields, such as education, industry, national defense, medical treatment and physical culture. Today, the China Psychology Society has a history of 58 years. Since the founding of New China, thanks to the concern of the party and state, the Psychology Society has steadily grown in organization. The decade-long havoc brought on by the "gang of four" had virtually thrown psychology on the brink of death; but after the "gang of four" was smashed, the China Psychology gained a new life. The fact that the annual symposium was participated in by a large number of people representing a broad area who enriched the meeting with an abundance of these and documents is an unprecedented event which fully reflects the great contributions made by psychology towards the Four Modernizations.

The annual symposium focused on academic exchanges activities of various specialty groups. The representatives freed themselves of old ideas, spoke out freely, exchanged research achievements, discussed all sorts of academic and theoretical problems; they also discussed how to speed up the modernization of psychology itself, and how to make psychology serve our country's modernization and construction. Other relevant problems were discussed as well, such as short-range and long-range research plans for various branches of psychology, and how to bring about coordination and division of work. From beginning to end, the conference continuously stressed academic democracy and adhered to the policy of "double hundred." In general, the meeting was quite fruitful to the participating representatives.

The annual symposium also received congratulation cables from Professor Kai-ming-si, Chairman of the American Psychology Society, and Professor Lao-man, Director of the Psychology Department, University of Michigan.

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BRIEFS

NEW CAS INSTITUTES--Recently, the Chinese Academy of Sciences established three new research institutes: Institute of Ontogeny [Fayu Shengwexue Yanjiusuo 4099 5148 3932 3670 1331 4282 4496 2076], Institute of Applied Mathematics [Yingyong Shuxue Yanjiusuo 2019 3938 2422 1331 4282 4496 2076], and Institute of Systems Science [Xitong Kexue Yanjiusuo 4762 4827 4430 1331 4282 4496 2076]. The Institute of Ontogeny was formulated in accordance with the suggestion of Tong Dizhou [4547 4574 0719], the late vice president of the Chinese Academy of Sciences, and Professor Niu Manjiang [3662 3341 3068] of Temple University by combining the Zoological Institute with the Cytological Laboratory of the Botanical Institute. The Institute of Applied Mathematics, which resulted from the expansion of the Applied Mathematics Research and Popularization Office, chiefly conducts research on mathematical methods and basic theories used to serve the construction of the national economy and national defense as well as other sciences. The Institute of Systems Science is an extension of related labs and groups in the Institute of Mathematics; its chief function is to conduct theoretical research on cybernetics, comprehensive study of major systems in national defense and national economy, as well as basic theoretical research on related frontier sciences in mathematics. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 12 Nov 79 p 2] 9119

ELECTRONICS INSTITUTE RESEARCH ACHIEVEMENTS--Advancing forward and united as one in their efforts to realize the Four Modernizations, the cadres and masses of the Electronics Institute [Dianzixue Yanjiuxuo 7193 1311 1331 4282 4496 2076], Chinese Academy of Sciences have attained 17 important scientific research achievements this year. Not long ago, when the leaders of the Electronics Institute conducted inspections and acceptance tests of the scientific research achievements of the laboratories, they found 17 relatively advanced level achievements resulting from the scientific research work involving remote sensing systems, microwave devices for aerospace applications, and gas laser. Some of the electronic devices nearly reached the up-to-date level attained in similar products by foreign manufacturers, and some reached the international level of the early 1970's. Some of the products were badly needed in the construction of the national economy and national defense, and thus helped to fill the gaps in our country. [Text] [Tianjin TIANJIN RIBAO in Chinese 12 Nov 79 p 2] 9119

NATIONAL TOPOLOGY SOCIETY SYMPOSIUM--Not long ago, the National Topology Society [Quanguo Tuopu Xuehui 0356 0949 2148 2090 1331 2585]. Symposium was convened in Wuhu [5617 3275]. Twenty-five thesis and 20 comprehensive reports were delivered at the symposium, all of which represented the research achievements attained by our country's topological workers in recent years. The symposium also discussed the direction and problems of future research work, elected the responsible members of the liaison group, endorsed the resolution to conduct further academic exchanges, mutual exchanges of information and expand the contingent of researchers. [Text] [Beijing GUANGMING RIBAO in Chinese 17 Nov 79 p 2] 9119

ASTROGEODYNAMICS SYMPOSIUM--Recently, the China Astronomy Society held the 2nd Annual Astrogeodynamics Academic Symposium in Wuhan. Experts, professors and scientific technical workers in astronomy, surveying, geophysics and geology from all over the country delivered more than 50 academic theses and work reports at the meeting. Theses were also written and presented to the symposium for the exchange program by famous scientists in our country: Fu Chengyi [0265 2110 5030], Fang Jun [2455 0193], Zou Yixin [6760 0308 2450], Ye Shuhua [5509 0647 5478] and Zhou Jiangwen [0719 3068 2429]. Professor Mei-er-ji-ao-ev [phonetic], a world renown physicist of the Belgian Royal Astronomical Observatory, and Dr Duqiamu [phonetic] were invited to present academic reports on the theory and observation of solid tides. At the annual symposium, the exchanges focused on research activities related to the intersecting area of astronomy and geophysics. The scholars presented all sorts of ideas and suggestions on how to speed up future research work in astrogeodynamics. [Text] [Hong Kong ZHONGGUO WINWEN in Chinese 13 Nov 79 p 4] 9119

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AUTHOR: LI Xudan [2621 2485 2481]

ORG: None

TITLE: "Several Problems in Modern Geography"

SOURCE: Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese No 9, Sep 79 pp 1-2, 5

ABSTRACT: The 1960's was an era of great scientific and technological revolution in the world, and an important reform also occurred in the theories and methodologies of geography. In China, under the prolonged destructive forces of LIN Biao and gang of four, the science of geography remained seriously backward, however. In the last few years, in the process of reading and translating some new publications of geography in Western languages, the author has come to some general conclusions regarding the tendencies of development of the new geography. These may be summarized into four problems: (1) Is modern geography a natural science or a social science? (2) Is geographical regionalization or geographical factor the major subject of study of modern geography? (3) What is the view of modern geography regarding the relationship between man and his environment? (4) What is the interpretative school of modern geography? The paper devotes a separate section to the discussion of each of the above problems.

AUTHOR: ZHANG Yinuo [1728 0001 6179]

ORG: None

TITLE: "Prosperous Development of Harbor Construction"

SOURCE: Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese No 9, Sep 79 pp 3-4, 16

ABSTRACT: From the estuary of Yalujiang of the northern border with Korea to the estuary of Beilunhe bordering Vietnam in the south, the coastline of China measures more than 18 thousand km, and there are also numerous islands along the coastal sea. This condition makes China a continental as well as an oceanic nation. Among the estuarial harbors in China, there are Tianjin, Shanghai, Ningbo, Huangpu, Guangzhou. These are naturally shallow, and investment cost in dredging is inavoidably great. Chinese bay harbors include Qinhuangdao, Qingdao, Lianyungang, Zhanjiang, etc, which have mostly rocky shores to cause silting to be less of a problem. Following a brief discussion of China's harbor construction since 200 B.C.,the progress made in both new construction and dredging improvement of old harbors in the past 3 decades since the liberation is reviewed. In 1978, the cargo traffic in all the harbors of China reached two hundred million tons, a more than twenty fold increase over the 3 decades.

AUTHOR: MEN Wanhe [7024 8001 0735]

ORG: None

TITLE: "Thirty Years of Engineering Management of Haihe"

SOURCE: Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese No 9, Sep 79 pp 6-7, 32

ABSTRACT: Haihe is the largest water system of North China, originating in the vicinity of Jingang Bridge of Tianjin City in the west and entering the sea at Dagukou of the east, totaling more than 70 km. It connects, in its upper reaches, with major and minor streams, numbering more than three hundred, with all of them spreading out like a fan on the North China Plain. From 1368 to 1949, in the Haihe valley, there had been 367 floods and 400 plus droughts and a total of 116 counties had suffered severe damages and salinization caused by repeated inundation was destroying more than 5 thousand mou of fields. After the liberation, under the concern and guidance of Chairman MAO and Premier Zhou, there had been several five-year plans for the management of Haihe. The emphasis of the early stage was on basic construction of fields and water conservancy to guarantee continuous production of grain and cotton. The second stage began in late 1957. By 1964, more than 600 small reservoirs had been constructed in the Haihe valley. Since then, the engineering has been concentrated on diking lowlands of the middle reaches to improve drainage on the one hand and soil conservation measures of the 30 thousand hills on the other. Today more than half of the salinized lands of the plain have been reconstructed, and such natural disasters as floods and droughts have been basically eliminated in this region. This paper reviews the struggles to manage this river valley in the past 30 years.

AUTHOR: Li Zhiwei [7120 1807 0251]

ORG: None

TITLE: "Highways of Yunnan"

SOURCE: Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese No 9, Sep 79 pp 8-9

ABSTRACT: More than 93 percent of Yunnan Province are mountains and highlands. Highway construction in that province began in 1921. By 1950, there were 2783 km of workable highways. Of the 120 plus counties, motorized vehicles could reach by 46. In the remaining, the backs of men and horses were the major form of transport. The inhabitants bartered one chicken for a sewing needle, or the skin of a sheep for half a catty of salt. The poor farmers sometimes tasted no salt year in and year out. At the end of 1978, 41,816 km of highways had been completed in that province, with more than 4985 bridges. The improved transportation condition has promoted the unity of the various nationalities of the province. In 1950, there was 20 thousand passenger transport on highways, while in 1978, 25,340,000 passengers used the highways, an increase of 2260 fold. Highway construction in Yunnan Province in the past 30 years is generally described in the paper.

AUTHOR: NING Shan [1337 1472]

ORG: None

TITLE: "China's Natural Preserves"

SOURCE: Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese No 9, Sep 79 pp 10-12

ABSTRACT: Complex terrains and varieties of climate within the vast territory of China provide excellent conditions for the growth and propagation of numerous species of wild animals and plants. Statistics report more than 7 thousand species of trees, including a large number of precious and rare species. More than 420 species of animals, 11.2 percent of the world total, have been reported in China and 15.3 percent of the world's species of birds can be found in China. Neglect and destruction of successive reactionary governments had caused China's natural resources to d minish, however. Although some game preserves had begun to be established , in Dinghcshan of Guangdong, Fenglin of Hailongjiang, Daxinganling of Neimonggol, Xiaomengyang of Yunnan for example, the destructive forces of LIN Biao and gang of four had caused them to deteriorate for lack of management organizations or personnel. In the 1970's, after the demise of LIn Biao et al, the attention to the preservation of the country's natural resources has be revived. Today, China has 45 natural preserves, totalling about 1,570,000 hectares and amounting to about .16 percent of China's territory. They are relatively small, compared with the 15 percent of Japan, 11 percent of West Germany, and 10 percent of the U.S.A.; they should, therefore, be cared for, loved, and treasured. This paper gives a general description of these game and plant preserves, with a map depicting their distribution in the country.

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